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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,002	02/15/2001	Alan F. Graves	12660ROUS02U	6057

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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/783,002	GRAVES ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 10-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 10-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the figure provided in the amendment of 13 July 2004 does not fully fit on the page. The fax footer information cuts off information in the figure. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 20 and 21 rejected under 35 U.S.C. 102(e) as being anticipated by Patterson et al. (US Patent No. 6356684).

Regarding claim 20, Patterson et al. disclose a photonic network node comprising: at least one multiplexer for multiplexing a plurality of wavelengths into a wavelength division multiplexed signal and at least one optical compensation element operative to dynamically control amplitude of a single one of the plurality of wavelengths based at least in-part on amplitude of an output carrier associated with the single wavelength (figs. 13 and 16 and col. 9, lines 48 to col. 10, line 21 and col. 11, lines 14-23, where Patterson et al. discloses that compensating for dispersion of wavelength maximizes the high-frequency signal power and re-opens up the signal "eye", which is a form controlling the signal shape and amplitude).

Regarding claim 21, disclose that the compensation element is further operative to dynamically control dispersion compensation of the wavelength (figs. 13 and 16 and col. 9, lines 48 to col. 10, line 21 and col. 11, lines 14-23).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tshushima et al. (US Patent No. 6424445) in view of Eggleton et al. (US Patent No. 6370300), and further in view of Fukashiro et al. (US Patent No. 6362905) and further in view of Patterson et al. (US Patent No. 6356684).

Regarding claim 1, Tsushima et al. disclose a photonic network node comprising: means for demultiplexing an optical signal into channels (fig. 16, elements 201); photonic switch fabric (fig. 16, element 123); and means for multiplexing a plurality of channels into an optical signal (fig. 16, elements 202). Tsushima et al. do not disclose means for reducing a variance between inputs to the photonic network node by applying dynamically adjusted bulk compensation to all channels of the optical signal. Eggleton et al. disclose a photonic network node comprising: means for reducing a variance between inputs of an optical signal received at a photonic node by applying dynamically adjustable bulk compensation to all channels of the multiplexed signal (fig. 2 and col. 4, lines 14-43 and col. 4, line 65 to col. 5, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to use adjustable bulk compensation at the multiplexed input signal entering the node of Tsushima et al, in order to variably compensate for wavelength dispersion accumulated in the network due to non-linear effects and environmental changes in the network, as taught by Eggleton et al. (col. 2, lines 41-54). The combination of Tsushima et al. and Eggleton et al. do not disclose means for monitoring before and after the photonic switch fabric. Fukashiro et al. disclose a photonic node comprising means for performance monitoring on each one of a plurality of channels of the optical signal before and after a cross-connect (fig. 11, elements 24 and col. 13, lines 36-50). It would have been obvious to one skilled in the art at the time of the invention to use the optical cross-connect disclosed by Fukashiro et al., as the optical crossconnect of the optical node of Tshusima et al., to provide the benefits of individual signal performance monitoring for the

individual signal channels, as taught by Fukashiro et al. Also, the combination of Tsushima et al., Eggleton et al. and Fukashiro et al. do not disclose means for performing dynamically adjustable impairment compensation on each one of the plurality of channels of the optical signal, responsive to monitoring of each channel and based at least in part on output carrier power. Patterson et al. disclose individual channel, dynamically adjustable, dispersion compensators in a WDM node that are controlled based on a tapped channel power feedback signal (figs. 13 and 16 and col. 9, lines 48-65, col. 10, lines 5-21 and col. 11, lines 14-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to add individual channel variable compensators to each demultiplexed channel of Tshusima et al., in order to provide the benefit of compensating for any individual wavelength dispersion that may need compensation based on performance monitoring information for the individual wavelength.

Regarding claim 2, the combination of Tsushima et al., Eggleton et al., Fukashiro et al. and Patterson et al. disclose that the photonic switch fabric includes a plurality of optical switch planes, including switching groups of wavelengths (Tsushima et al.: fig. 14 and 15 and col. 13, line 36 to col. 14, line 11) as well as individual demultiplexed wavelengths (Tsushima et al.: fig. 16 and col. 14, lines 12-34).

Regarding claim 3, the combination of Tsushima et al., Eggleton et al., Fukashiro et al. and Patterson et al. disclose that the means for demultiplexing includes a 1:M demultiplexer (Tsushima et al.: fig. 16, element 201).

Regarding claim 11, the combination of Tsushima et al., Eggleton et al., Fukashiro et al. and Patterson et al. disclose means for monitoring including channel performance monitors (Fukashiro et al.: fig. 11, elements 24 and col. 13, lines 36-50).

Regarding claim 12, the combination of Tsushima et al., Eggleton et al., Fukashiro et al. and Patterson et al. disclose that the means for multiplexing includes an M:1 multiplexer (Tshushima et al.: fig. 16, element 202).

5. Claims 13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No. 6370300) and further in view of Patterson et al. (US Patent No. 6356684).

Regarding claim 13, Fukashiro et al. disclose a multi-channel photonic node comprising means for performance monitoring on each one of a plurality of channels of the optical signal (fig. 11 and col. 13, lines 36-50) and means for protecting channels responsive to the monitoring means (fig. 4 and col. 7, lines 4-41; and fig. 11 and col. 13, line 51 to col. 14, line 10) and WDM compatibility (col. 8, lines 46-52), but do not disclose means for reducing a variance between inputs to the photonic network node by applying dynamically adjusted bulk compensation to all channels of the optical signal. Eggleton et al. disclose a multi-channel photonic network node comprising: means for reducing a variance between inputs of an optical signal received at a photonic node by applying bulk compensation to all channels of the optical signal before demultiplexing an optical signal into a plurality of channels (fig. 2 and col. 4, lines 14-43 and col. 4, line 65 to col. 5, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to use adjustable bulk compensation at the multiplexed input signal entering the node of Fukashiro et al., in order to variably compensate for wavelength dispersion accumulated in the network due to non-linear effects and environmental changes in the network, as taught by Eggleton et al. (col. 2, lines 41-54). Also, the combination of Fukashiro et al. and Eggleton et al. do not disclose means for performing dynamically adjustable impairment compensation on each one of the plurality of channels of the optical signal, responsive to

monitoring of each channel and based at least in part on output carrier power. Patterson et al. disclose individual channel, dynamically adjustable, dispersion compensators that are controlled based on a tapped channel power feedback signal (figs. 13 and 16 and col. 9, lines 48-65, col. 10, lines 5-21 and col. 11, lines 14-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to add individual channel variable compensators to each channel of Fukashiro et al., in order to provide the benefit of compensating for any individual channels dispersion that may need compensation based on performance monitoring information for each channel.

Regarding claim 16, the combination of Fukashiro et al., Eggleton et al. and Patterson et al. disclose that the means for monitoring include means for detecting and isolating photonic node specific faults and mis-connects, and means for triggering protection switching to redundant modules when appropriate (Fukashiro et al.: col. 7, lines 4-41; and col. 13, line 51 to col. 14, line 10).

Regarding claim 17, the combination of Fukashiro et al., Eggleton et al. and Patterson et al. disclose that the means for monitoring includes photonic node output channel power level compensation responsive thereto (Fukashiro et al.: fig. 4 and col. 7, lines 4-41; col. 1, line 64 to col. 2, line 12; and col. 2, lines 29-39).

Regarding claim 18, the combination of Fukashiro et al., Eggleton et al. and Patterson et al. disclose that the means for monitoring includes photonic node output channel dispersion compensation responsive thereto (Patterson et al.: figs. 13 and 16 and col. 9, lines 48-65, col. 10, lines 5-21 and col. 11, lines 14-23).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsushima et al. (US Patent No. 6424445) in view of Eggleton et al. (US Patent No. 6370300), and further in

view of Fukashiro et al. (US Patent No. 6362905) and further in view of Patterson et al. (US Patent No. 6356684) as applied to claims 1-3 and 11-12 above, and further in view of Harley et al. (US Patent No. 6323978).

Regarding claim 10, the combination of Tsushima et al., Eggleton et al., Fukashiro et al. and Patterson et al. do not disclose that the means for monitoring includes wrapper readers. Harley et al. disclose an optical channel overhead, used as a communication channel for remote monitoring between transmitters and receivers (col. 1, lines 12-42), and an optoelectronic converter for detecting an optical signal having an embedded control signal and demodulating the control signal to produce control information (col. 3, lines 26-39). It would have been obvious to one skilled in the art at the time of the invention to use optical channel overheads as disclosed by Harley et al., in the system of the combination of Tsushima et al., Eggleton et al., Fukashiro et al. and Patterson et al., for end-to-end channel monitoring and controlling channel routing.

7. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No. 6370300) and further in view of Patterson et al. (US Patent No. 6356684), as applied to claims 13, and 16-18 above, and further in view of Tsushima et al. (US Patent No. 6424445).

Regarding claim 14 and 15, the combination of Fukashiro et al., Eggleton et al. and Patterson et al. disclose monitoring in the optical cross-connect used to control protection switching (Fukashiro et al.: col. 7, lines 4-41; and col. 13, line 51 to col. 14, line 10), but do not disclose a supervisory channel used for communicating between nodes and for controlling the optical cross-connects. Tsushima et al. disclose an optical node where a supervisory channel is used for communicating between nodes and for controlling the optical cross-connects

(Tsushima et al.: abstract and col. 1, lines 14-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a supervisory channel, as disclosed by Tshushima et al., between multiple nodes of the combination of Fukashiro et al., Eggleton et al. and Patterson et al., to communicate monitoring and control information between nodes for network wide performance and fault management, and the triggering of network wide protection and restoration.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukashiro et al. (US Patent No. 6362905) in view of Eggleton et al. (US Patent No. 6370300) and further in view of Patterson et al. (US Patent No. 6356684), as applied to claims 13, and 16-18 above, and further in view of Chaudhuri et al. (US Patent No. 6587235).

Regarding claim 19, the combination of Fukashiro et al., Eggleton et al. and Patterson et al. disclose a node with an optical cross-connect, but do not disclose means for interfacing with electrical signaling network nodes. Chaudhuri et al. disclose a node with an optical cross-connect, including interfaces with electrical signals using electrical-to-optical conversion (fig. 5; col. 5, lines 22-36). It would have been obvious to one skilled in the art at the time of the invention to use electrical-to-optical conversion disclosed by Chaudhuri et al., in the node of the combination of Fukashiro et al., Eggleton et al. and Patterson et al., in order to interface with electrical signals in addition to optical signals.

Response to Arguments

9. Applicant's arguments of the amendment of 18 January 2005 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

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